THAT WHICH IS CLAIMED IS:

1. A millimeter wave (MMW) radio frequency transceiver module comprising:

a substrate board;

a plurality of microwave monolithic integrated circuit (MMIC) chips supported by the substrate board and arranged in a receiver section, a local oscillator section, and a transmitter section; and

a plurality of filters and radio frequency interconnects formed on the substrate board and operative with and/or connecting the receiver, local oscillator and transmitter sections.

2. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, and further comprising electrical interconnects that are printed on the substrate board.

3. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, and further comprising a dielectric layer and conductive layer formed on the substrate board opposite the MMIC chips and filters and radio frequency interconnects side, and further comprising electrical interconnects formed within the conductive layer, and a plurality of conductive vias extending from the electrical interconnects through the substrate board to the surface having the MMIC chips and filters and radio frequency interconnects.

4. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, and further comprising a cutout formed within the substrate for

receiving a MMIC chip for allowing direct attachment of the MMIC chip to a coefficient of thermal expansion (CTE) matched carrier or heat sink.

5. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, and further comprising at least one row of ground vias formed within the substrate board and providing isolation between at least the transmitter and the receiver sections formed on the substrate board.

6. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, wherein said transmitter, receiver and local oscillator sections are formed separated and sectioned from each other to enhance isolation and reduce oscillations.

7. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, and further comprising a microstrip-to-waveguide transition formed at each of the transmitter and receiver sections.

8. A millimeter wave (MMW) radio frequency transceiver module according to Claim 7, wherein each microstrip-to-waveguide transition comprises a backshort formed relative to the substrate board and a waveguide launch operative with the backshort, and a plurality of isolation vias.

9. A millimeter wave (MMW) radio frequency transceiver module according to Claim 1, wherein said substrate board comprises a single ceramic board.

10. A millimeter wave (MMW) radio frequency transceiver module according to Claim 9, wherein said

single, ceramic board is from about 90 to about 99.6 percent alumina, and ranges from about 5 to about 20 mil thick.

11. A millimeter wave (MMW) radio frequency transceiver module comprising:

housing having a bottom plate and housing cover attached to the bottom plate

a substrate board positioned on the bottom plate and covered by the housing cover;

a plurality of microwave monolithic integrated circuit (MMIC) chips supported by the substrate board and arranged in a receiver section, a local oscillator section, and a transmitter section; and

a plurality of filters and radio frequency interconnects formed on the substrate board and operative with and/or connecting the receiver, local oscillator and transmitter sections.

12. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, wherein the housing cover includes an electro-magnetic interference gasket that is positioned above and around MMIC chips supported by substrate board.

13. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising radio frequency channels formed in the cover and an absorber material operative with the channels to enhance isolation among the local oscillator, transmitter and receiver sections.

14. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, wherein the

housing cover includes SMA connectors having a solderless spring-loaded intermediate contact.

15. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising electrical interconnects that are printed on the substrate board.

16. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising a dielectric layer and conductive layer formed on the substrate board opposite the MMIC chips and filters and radio frequency interconnects, and further comprising electrical interconnects formed within the conductive layer, and a plurality of conductive vias extending from the electrical interconnects through the substrate board to the surface having the MMIC chips and thick film printed filters and radio frequency interconnect.

17. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising a cutout formed within the substrate for receiving a MMIC chip for allowing direct attachment of the MMIC chip to a coefficient of thermal expansion (CTE) matched carrier or heat sink.

18. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising at least one row of ground vias formed within the substrate board and providing isolation between at least the transmitter and the receiver sections formed on the substrate board.

19. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, wherein said transmitter, receiver and local oscillator sections are formed substantially separated and sectioned from each other to enhance isolation and reduce oscillations.

20. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising a microstrip-to-waveguide transition formed at each of the transmitter and receiver sections.

21. A millimeter wave (MMW) radio frequency transceiver module according to Claim 20, wherein each microstrip-to-waveguide transition comprises a backshort formed relative to the substrate board and a waveguide launch operative with the backshort, and a plurality of isolation vias.

22. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, wherein said substrate board comprises a single ceramic board.

23. A millimeter wave (MMW) radio frequency transceiver module according to Claim 22, wherein said single ceramic board is from about 90 to about 99.6 percent alumina and ranges from about 5 to about 20 mil thick.

24. A method of forming a millimeter wave (MMW) radio frequency transceiver module comprising the steps of:

forming a substrate board;

mounting a plurality of microwave monolithic integrated circuit (MMIC) chips on the substrate board such that the MMIC chips are arranged in a receiver

section, a transmitter section and a local oscillator section;

forming a plurality of filters, radio frequency, and electrical interconnects that are operative with the receiver, local oscillator and transmitter sections.

25. A method according to Claim 24, and further comprising the step of forming a dielectric layer and conductive layer on the substrate board opposite the MMIC chips and filters and radio frequency interconnects, forming electrical interconnects in the conductive layer, and forming conductive vias to extend from the electrical interconnects through the substrate board to the surface having the MMIC chips and filters and radio frequency interconnects.

26. A method according to Claim 24, and further comprising the step of printing electrical interconnects on the substrate board.

27. A method according to Claim 24, and further comprising the step of forming the substrate board as a ceramic substrate board that is about 90 to about 99.6 percent alumina and about 5 to about 20 mil thick.

28. A method according to Claim 24, and further comprising the step of forming the transmitter, receiver, and local oscillator sections separated and sectioned from each other.

29. A method according to Claim 24, and further comprising the step of forming a microstrip-to-waveguide transition at each of the transmitter and receiver sections.

30. A method according to Claim 24, and further comprising the step of forming ground vias to provide isolation between at least the transmitter and receiver sections.

31. A method according to Claim 25, and further comprising the step of forming the radio frequency interconnects and filters by thick film processing techniques.

32. A millimeter wave (MMW) radio transceiver module according to Claim 1, and further comprising a plurality of embedded capacitors and resistors printed on the substrate board.

33. A millimeter wave (MMW) radio frequency transceiver module according to Claim 11, and further comprising a plurality of embedded capacitors and resistors printed on the substrate board.